

Appl. No. 09/327,523
Amtd. Dated September 3, 2004
Reply to Office Action of March 3, 2004

IN THE CLAIMS:

1. (Currently Amended) A solid-state imaging element, comprising:

unit pixels, arranged in a matrix, each of which ~~have~~ has a photoelectric conversion element, a transfer switch for transferring charge stored in said photoelectric conversion element, a charge store part for storing charge transferred by said transfer switch, a reset switch for resetting said charge store part, and an amplifying element for outputting signals a signal in accordance with a potential of said charge in said charge store part;

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a vertical scanning circuit for selecting pixels in units of rows by controlling a reset potential applied to selected ones of said reset switches;

wherein each of said reset switches is a depression type transistor;

a horizontal scanning circuit for sequentially selecting signals output to said vertical signal lines; and

an output circuit for outputting signals selected by said horizontal scanning circuit.

2. (Currently Amended) A solid-state imaging element as claimed in claim 1, wherein said vertical scanning circuit applies vertical selection pulses sequentially output during vertical scanning to said selected ones of said reset switches as a reset potential thereof.

3. (Original) A solid-state imaging element as claimed in claim 1, wherein said charge store part is floating diffusion.

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4. (Canceled) Please cancel Claim 4.

5. (Original) A solid-state imaging element as claimed in claim 1, wherein said output circuit outputs signals read into said vertical signal lines in voltage mode.

6. (Original) A solid-state imaging element as claimed in claim 1, wherein said output circuit outputs signals read into said vertical signal lines in current mode.

Claim 7
7. (Previously Presented) A solid-state imaging element as claimed in claim 1, wherein said unit pixels include an overflow path between said photoelectric conversion element and an area to which a pixel source voltage is applied, said overflow path being used to discharge excess charges of said photoelectric conversion element.

8. (Previously Presented) A solid-state imaging element as claimed in claim 1, wherein a negative potential is applied to the control electrode of each of said transfer switches.

Claims 9-11 (Canceled) Claims 9-11 were previously canceled.

12. (Currently Amended) A method for driving a solid-state imaging element which includes unit pixels, arranged in a matrix, each of which have has a photoelectric conversion element, a transfer switch for transferring charge stored in said photoelectric conversion

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element, a charge store part for storing charge transferred by said transfer switch, a reset switch for resetting said charge store part, and an amplifying element for outputting a signal in accordance with a potential of said charge store part, said method comprising the step of:

selecting pixels in units of rows by controlling a reset potential applied to selected ones of said reset switches, wherein a negative voltage is applied to a gate of said reset switch.

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13. (Original) A method for driving a solid-state imaging element as claimed in claim 12, further comprising the step of:

outputting signals read into said vertical signal lines in voltage mode.

14. (Original) A method for driving a solid-state imaging element as claimed in claim 12, further comprising the step of:

outputting signals read into said vertical signal lines in current mode.

15. (Currently Amended) A camera system using a solid-state imaging element as an imaging device, said solid-state imaging element, comprising:

unit pixels arranged in a matrix, each of which have a photoelectric conversion element, a transfer switch for transferring charge stored in said photoelectric conversion element, a charge store part for storing charge transferred by said transfer switch, a reset switch for resetting said charge store part, and an amplifying element for outputting a signal in accordance with a potential of said charge store part;

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a vertical scanning circuit for selecting pixels in units of rows by controlling a reset potential applied to selected reset switches;

wherein said reset switches is a depression type transistor;

a horizontal scanning circuit for sequentially selecting signals output to said vertical signal lines in units of columns; and

an output circuit for outputting signals selected by said horizontal scanning circuit.

16. (Previously Presented) The solid-state imaging element of claim 1,
wherein a falling edge of the reset pulse triggers reading of a reference level.

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17. (Previously Presented) The solid-state imaging element of claim 1,
wherein a changing state of the reset pulse and a selection pulse initiates a pixel reading operation.

18. (Previously Presented) The method of driving a solid-state imaging element of claim 12, further comprising triggering reading of a reference level with a falling edge of the reset pulse.

19. (Previously Presented) The method of driving a solid-state imaging element of claim 12, wherein a changing state of the reset pulse and a selection pulse initiates a pixel reading operation.

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20. (Previously Presented) The camera system of claim 15, wherein a falling edge of the reset pulse triggers reading of a reference level.

21. (Previously Presented) The camera system of claim 15, wherein a changing state of the reset pulse and a selection pulse initiates a pixel reading operation.